WHAT IS CLAIMED IS:

1. A toroidal disc for a traction drive device to which a power roller frictionally contacts during operation of the traction drive device, comprising:

a circular steel body having a concentric toroidal surface, the toroidal surface having an operative angular range that extends in a radial direction by ± 25 degrees from a reference angular position which induces a speed change ratio of 1.2 : 1 of the traction drive device when operatively contacting the power roller, the operative angular range of the toroidal surface having a hardness of higher than 750 Hv at a depth ranging from about 50 μm to about 100 μm.

2. A toroidal disc as claimed in Claim 1, in which the concentric toroidal surface is formed with a plurality of fine recesses so that the toroidal surface has a given surface roughness, each recess having a depth smaller than 3 μm.

3. A toroidal disc as claimed in Claim 2, in which the operative angular range of the toroidal surface has a residual stress of higher than 700 Mpa in absolute value at the depth ranging from about 50 μm to about 100 μm.

4. A method of producing a toroidal disc for a traction drive device to which a power roller frictionally contacts during operation of the traction drive device, comprising:

preparing a circular steel body that has been subjected to a carbonitriding hardening/tempering process, the steel body having a concentric toroidal surface which is formed with a plurality of fine recesses each having a depth of smaller than 3 μm;

turning the circular steel body about a rotation axis thereof;

pressing a ball member against the toroidal surface with a given pressing force; and

moving the ball member on a given angular range of the toroidal surface in a direction perpendicular to the rotation axis of the circular steel body while pressing the ball member against the toroidal surface with the given pressing force.

5. A method as claimed in Claim 4, in which the given pressing force with which the ball member is pressed against the toroidal surface is smaller than 2000N.

6. A method as claimed in Claim 5, in which a mean contact pressure with which the ball member contacts the toroidal surface is a value ranging from about 2.5 GPa to about 5.5 GPa.

7. A method as claimed in Claim 4, in which the given angular range of the toroidal surface extends in a radial direction by ± 25 degrees from a reference angular position which induces a speed change ratio of 1.2 : 1 of the traction drive device when operatively contacting the power roller.

8. A method as claimed in Claim 4, in which the given angular range of the toroidal surface extends in a radial direction by ± 15 degrees and 10 degrees from a reference angular position which induces a speed change ratio of 1.2 : 1 of the traction device when operatively contacting the power roller.

9. A method as claimed in Claim 4, in which the given angular range of the toroidal surface is formed with the plurality of fine recesses.

10. A method as claimed in Claim 4, in which during the radial movement of the ball member on the given angular range of the toroidal surface of the toroidal disc, the ball member is urged to contact the toroidal surface at substantially right angles.

11. A method as claimed in Claim 4, in which the ball member is constructed of silicium-nitride, ceramic, artificial diamond or hard metal.

12. A method as claimed in Claim 11, in which a rotation speed of the toroidal disc about the rotation axis at an angular point where the ball member contacts the toroidal surface is controlled to a value ranging from about 100 m/min to about 350 m/min, and in which a process pitch of the ball member per each turning of the toroidal disc is controlled to a value smaller than 0.3 mm.

13. A method of producing a toroidal disc for a traction drive device to which a power roller frictionally contacts during operation of the traction drive device, comprising:

preparing a circular steel body that has been subjected to a carbonitriding hardening/tempering process, the steel body having a concentric toroidal surface;

turning the circular steel body about a rotation axis thereof;

pressing a ball member against the toroidal surface with a given pressing force;

moving the ball member on a given angular range of the toroidal surface in a direction perpendicular to the rotation axis of the circular steel body while pressing the ball member against the toroidal surface with the given pressing force; and

providing the toroidal surface with a plurality of fine recesses so that the toroidal surface has a certain surface roughness.